**REMARKS/ARGUMENTS**

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 2, 4, 7-9, 11, 13, 14, 16, 19-21, 23 and 25-29 are presently pending in this application; Claims 5, 6 and 18 have been previously canceled; Claims 10 and 22 having been presently canceled without prejudice; Claim 29 has been added reciting features similar to those in original Claim 6; and Claims 1 and 13 having been presently amended to add features similar to those in original Claim 10.

In the outstanding final Office Action, Claims 1, 7, 8, 10, 11, 25 and 26 were rejected under 35 U.S.C. §102(b) as being anticipated by Maebashi (U. S. Patent 5,098,571) as evidenced by 'Glossary Metal Working Terms, Pg. 305' (hereinafter "Glossary") and 'Study of the sintering properties of plasma synthesized ultrafine SiC powders' (hereinafter "Study"); Claims 2, 4, 6 and 9 were rejected under 35 U.S.C. §103(a) as being obvious over Maebashi in view of Waku et al (U. S. Patent 5,981,415); Claims 13, 14, 19, 20, 22, 23, 27 and 28 were rejected under 35 U.S.C. §103(a) as being obvious over Maebashi as evidenced by Glossary in view of Larsen et al (U. S. Patent 5,716,559); and Claims 14, 16, 18 and 21 were rejected under 35 U.S.C. §103(a) as being obvious over Maebashi and Larsen et al in view of Waku et al.

The outstanding Office Action takes a position that the agglomerated crystals in the binder of Maebashi meet the claimed bonding layer. See Office Action, pages 2 and 3. The outstanding Office Action also takes a position that Maebashi describes (as in canceled Claim 10) a ratio of an average particle size of the ceramic coarse particle to the ceramic fine particles is 15:1 - 200:1. See Office Action, page 3.

Yet, the cited portion of Maebashi (i.e., col. 2, lines 47-70) merely describes ranges of sizes for the alumina coarse particles (20 to 100 $\mu$m) and a range of size for the alumina-

zirconia mixed particles (0.1 to 0.3 $\mu$m). While a ratio of an average particle size of the ceramic coarse particle to the ceramic fine particles could (in theory) be calculated, there is no disclosure in Maebashi that the coarse and fine particles would be mixed at the claimed ratio.

In *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1554 (Fed. Cir. 1997), the Court found a similar situation in which an anticipation rejection was improperly applied. It stated there that:

> Although the Lemelson patent does describe substitution of a balloon for the medicated swab, it does not illustrate this balloon embodiment. Thus, even an artisan of ordinary skill ***must guess about how exactly*** the balloon would substitute for the medicated swab and whether the resulting balloon catheter would be capable of radial, as well as axial, expansion. In fact, Lemelson makes no suggestion of any kind about its structural suitability for angioplasty procedures. About the most that can be said for the Lemelson patent is that it does not explicitly describe anything inconsistent with angioplasty procedures. However, this negative pregnant is ***not enough to show anticipation.*** [Emphasis added.]

Here, while one might be able to derive a ratio from the recited alumina coarse particle sizes and alumina-zirconia mixed particle sizes in Maebashi, in reality, one is only left to ***guess*** as to what ratio is exactly being used in Maebashi.

Moreover, even if the examiner were to consider the particle size description in Maebashi to somehow constitute the teaching of a ratio range, M.P.E.P. § 2131.03 II states that prior art which teaches a range within, overlapping, or touching the claimed range anticipates if the prior art range discloses the claimed range with "sufficient specificity".

> When the prior art discloses a range which touches, overlaps or is within the claimed range, but ***no specific examples falling within the claimed range are disclosed***, a case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter ***must be disclosed in the reference with "sufficient specificity to constitute an anticipation under the statute."*** What constitutes a "sufficient specificity" is fact dependent. If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of ***unexpected results*** within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an

> anticipation of the claims. The unexpected results may also render the claims unobvious. The question of "sufficient specificity" is similar to that of "clearly envisaging" a species from a generic teaching. See MPEP § 2131.02. A 35 U.S.C. 102/ 103 combination rejection is permitted if it is unclear if the reference teaches the range with "sufficient specificity." The examiner must, in this case, provide reasons for anticipation ***as well as a motivational statement regarding obviousness***. *Ex parte Lee*, 31 USPQ2d 1105 (Bd. Pat. App. & Inter. 1993) (expanded Board). For a discussion of the obviousness of ranges see MPEP § 2144.05. [emphasis added]

Here, there are no specific examples in Maebashi of a binder having one alumina particle size and one alumina-zirconia mixed particle size. Furthermore, Maebashi's data shown in Figures 4, 5, and 6 focus on alumina content (in the alumina-zirconia mixture or in the whole of the starting materials), and Maebashi's data are not concerned with the ratio of an average particle size of the ceramic coarse alumna particle to the ceramic fine alumina-zirconia mixed particles.

Only Applicants specification at page 12 provides any disclosure or motivation for the claimed ratio of an average particle size of the ceramic coarse particle to the ceramic fine particles. Only Applicants specification at page 12 provides any rationale for the criticality of the claimed range. Thus, the claimed ratio parameter is not a feature known in the art to be a result-effective variable, and thus is not subject to optimization. M.P.E.P. § 2141.02 V states:

> The prior art did not recognize that treatment capacity was a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.

Nor can the examiner take a position that the claimed ratio range is an inherent feature. M.P.E.P. § 2112 states that, to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and that it would be recognized by persons of ordinary skill. M.P.E.P. § 2112 further states that inherency may not be established by probabilities or possibilities. No such

showing exists in the extrinsic evidence that claimed ratio is necessarily present in Maebashi or that the claimed ratio would be recognized by persons of ordinary skill.

Thus, given these facts and in order to facilitate prosecution, Claim 1 has been amended to include the ratio range recited previously in Claim 10. Claim 1 as amended recites:

> 1. A ceramic porous sintered body comprising:
> a sintered body comprising,
> a plurality of ceramic coarse particles, and
> a polycrystalline sintered body forming a bonding layer, the bonding layer existing between the ceramic coarse particles and connecting the ceramic coarse particles,
> wherein the polycrystalline sintered body includes a plurality of ceramic fine particles having an average particle size smaller than the ceramic coarse particles,
> said sintered body has an average pore diameter of 5 μm to 50 μm, and
> a ratio of an average particle size of the ceramic coarse particle to the ceramic fine particles is 15:1 - 200:1.

For the reasons given above, Applicants submit that independent Claims 1 and 13 (and the claims dependent therefrom) patentably define over Maebashi, Larsen et al. and Waku et al, and should be allowed.

Moreover, new independent Claim 29 has been added which includes the features of Claim 1 and previously canceled Claim 6, which recited that the ceramic fine particles are formed by sintering with the grain boundary remained. Claim 29 recites:

> A ceramic porous sintered body comprising:
> a sintered body comprising,
> a plurality of ceramic coarse particles, and
> a polycrystalline sintered body forming a bonding layer, the bonding layer existing between the ceramic coarse particles and connecting the ceramic coarse particles, wherein
> the polycrystalline sintered body includes a plurality of ceramic fine particles formed by sintering ***with the bonding layer having grains of the ceramic fine particles remaining and the bonding layer bridging between the ceramic coarse particles***, and
> said sintered body has an average pore diameter of 5 μm to 50 μm.
> [Emphasis added.]

The examiner's attention is invited to Applicants' Figures 2 and 3 which compare a conventional process to one illustration of Applicants' invention. Figure 2 for the conventional process shows how the regions between the coarse particles 101 are not filled. Figure 3 for the illustration of Applicants' invention shows that the region between the coarse particles (i.e., the bonding layer) retains grains of the ceramic fine particles and shows the bonding layer bridges between the ceramic coarse particles. With this construction, the claimed ceramic porous sintered body of Claim 29 is thermally shock resistant (i.e., can prevent the sintered body from cracking).

The Office Action relies on Waku et al for an asserted teaching of ceramic fine particles are formed by sintering with the grain boundary remained, and cites col. 2, lines 1-17, which states.

> However, the room temperature strength may be significantly improved by controlling the production conditions and improving the starting powders, but the high temperature mechanical properties of ceramic composite materials are greatly influenced by the structure of the interface (grain boundary) between the particles of the component materials as well as by the interface (grain boundary) between and the crystal characteristics of the matrix and reinforcing phase. Further, at a high temperature, as the structure is finer, the more the superplastic property appears. Thus coexistence of the finer structure and the high temperature strength is difficult to attain.
>
> Accordingly, a new method for producing a composite ceramic material which allows precise control of the above factors as well as a new composite ceramic material which has a novel structure and interface or grain boundary structure, are in demand.

Thus, in Waku et al, the discussion of a "grain boundary" is confined to a discussion of the interface between particles. Therefore, Waku et al do not disclose or suggest a polycrystalline sintered body including a plurality of ceramic fine particles formed by sintering with the bonding layer having grains of the ceramic fine particles remaining and the bonding layer bridging between the ceramic coarse particles, as defined in Claim 29.

Thus, Claim 29 is patentable over the applied art.

In view of the amendments and discussions presented above, Applicants respectfully submit that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Ronald A. Rudder

Akihiro Yamazaki
Attorney of Record
Registration No. 46,155

Ronald A. Rudder, Ph. D.
Registration No. 45,618

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)

AY/RAR/csc
I:\ATTY\RAR\AMENDMENTS (2009)\273432US\273432US_AME 1.DOC